

Claims 6-8 have been rejected under 35 U.S.C. § 112, first paragraph, as based on disclosure which is not enabling. Specifically, The Examiner noted that essential elements of the circuit shown in Fig. 5 are not included in the claims. Applicant has cancelled claims 7 and 8 and has amended claim 6 to incorporate all essential elements of the circuit. Applicant therefore submits that amended claim 6 is proper under 35 U.S.C. § 112, as the essential elements of a power amplifier are present in the claim.

Claims 4-7 have been rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention.

Claim 4, which depends from claim 1, calls for an active low-pass filter system including a multiple feedback filter and an isolated-integrator band-reject filter coupled to the forward signal flow branch of the multiple feedback filter. Multiple feedback filters are well known in the art and are filters which provide feedback from the active device output to multiple points of the forward signal flow branch. Fig. 4a depicts an embodiment of the invention called for in claim 4. Paragraph 43 of the specification discusses that embodiment. Applicant submits that claim 4 is proper under 35 U.S.C. § 112.

Claim 5 which depends from claim 1 calls for an active low-pass filter system including a state variable filter circuit having an isolated integrator band reject filter coupled to the forward signal flow branch of a state variable filter. State variable filters are well known in the art as having multiple active devices coupled together to create multiple poles or notches. The embodiment of the invention called for in claim 5 is shown in Fig. 4b and is discussed in paragraph 44 of the specification. Applicant submits that claim 5 is proper under 35 U.S.C. 112.

Claim 6 has been amended to recite a power amplifier system including an amplifier.

Claim 7 has been cancelled.

Applicant therefore submits that claims 4-6 particularly point out and distinctly claim the subject matter of the invention and are proper under 35 U.S.C. § 112.

Claims 1, 4-6, and 8 have been rejected under 35 U.S.C. § 102(b) as anticipated by Chew, U.S. Patent No. 5,107,491.

Chew discloses, in Fig. 1, a circuit having the input of a band reject filter (14), coupled to the output of a low-pass filter (12). Applicant's claim 1 calls for a low-pass filter circuit including a resistive forward signal flow branch and an isolated integrator band reject

filter coupled to the low-pass filter circuit forward signal flow branch. Applicant submits that Chew does not disclose an isolated integrator band reject filter coupled to a low-pass filter forward signal flow branch and therefore does not anticipate nor render obvious Applicant's claim 1 nor claims 4 and 5 which depend therefrom.

Claim 6 calls for a power amplifier system including a pulse width modulation power circuit, an error amplifier and modulator circuit, a demodulation filter, and a feedback control loop which includes an active low pass filter, a feedback demodulation filter and an isolated integrator band reject filter. Chew does not disclose such structure. Applicant therefore respectfully submits that Chew does not anticipate nor render obvious Applicant's amended claim 6.

Claims 2 and 7 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Chew in view of Applicant's prior art Fig. 1.

Claim 7 has been cancelled.

Chew has been discussed hereinabove. Applicant's claim 2, which depends from claim 1, calls for a band reject filter which includes a resistor for tuning the band reject filter. Chew does not teach nor suggest such structure. Applicant therefore submits that Chew does not anticipate nor render obvious claim 2.

Claim 3 has been rejected under 35 U.S.C. § 103(a) as being unpatentable over Chew in view of Sallen et al. Sallen et al. shows various active filter design configurations, known in the art as Sallen and Key filters. Chew discloses a notched filter (14) coupled to the output of a low-pass filter (12). Claim 3, which depends from claim 1, calls for a low pass filter circuit which is a Sallen and Key filter. Applicant submits that, by combining Chew and Sallen and Key one would merely obtain a notched filter connected to the output of a low pass Sallen and Key filter. Such structure does not anticipate nor render obvious Applicant's claim 3. Applicant therefore respectfully submits Chew and Sallen et al do not anticipate nor render obvious Applicant's claim 3.

In view of the foregoing, Applicant respectfully submits that claims 1-6 distinguish over and are not obvious in view of any of the cited prior art and are in condition for allowance.

In the event Applicant has overlooked the need for an additional extension of time, payment of fee, or additional payment of fee, Applicant hereby petitions therefore and authorizes that any charges be made to Deposit Account No. 02-0385, Baker & Daniels.



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CRI0033.01

Should the Examiner have any further questions regarding any of the foregoing, he is respectfully invited to telephone the undersigned at (219) 460-1695.

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the Specification:

Paragraph 23 of the specification has been amended as follows:

[0023] Referring to Figure 1, a conventional isolated-integrator band-reject filter 20 is shown. The characteristic equation of the filter shown in Fig. 1 is:

$$G(s) = \frac{(RCs)^3 + 4(RCs)^2 + 3RCs + 12}{(RCs)^3 + 16(RCs)^2 + 39RCs + 12}$$

and wherein

$$f(\text{null}) = \frac{\sqrt{3}}{(2\pi RC)}$$

The isolated-integrator band-reject filter 20 uses capacitors of equal value, designated C, which may be inexpensive NPO ceramic capacitors. In addition to using capacitors of equal value, the resistors R are of a single value. The exception to the general rule of equal value for resistors R is the single tuning resistor R/12, which is connected to ground and provides a means to prevent unwanted noise during the tuning process. As can be seen in Figure 1, resistor R/12 may be variable; however, the value shown is a value of R/12. In general, the ratio for the value of resistors R of isolated-integrator band-reject filter 20 to resistor R/12 is at worst 12 to 1, which is still well within the range of screened-on processes. Therefore, for simplification, the value presented is R/12.--

Paragraph 24 of the specification has been amended as follows:

[0024] Referring now to Figure 2, three embodiments of the present invention are shown in which isolated-integrator band-reject filter 20 is incorporated into the resistive branches of Sallen & Key active low-pass filters. The characteristic null equation of the filters shown in Figs. 2a, 2b, and 2c is:

$$f(\text{null}) = \frac{\sqrt{3}}{(2\pi R_2 \times C_2)}$$

or

$$= \frac{\sqrt{3}}{(2\pi R6 \times C4)}$$

wherein

$$R7 = \frac{R6}{12}$$

and

$$R3 = \frac{R2}{12}$$

Additional information regarding the Sallen & Key filter is given in the article "A Practical Method of Designing RC Active Filters," authored by R. P. Sallen and E. L. Key on pages 51-62 of the March 1955 issue of IRE Transaction Circuit Theory which is incorporated herein by reference. Although isolated-integrator band-reject filter 20 is placed within a resistive branch of the Sallen & Key filter, additional series resistors are not required in the input or output terminals of the original Sallen & Key filter unless a pole at infinity is desired.

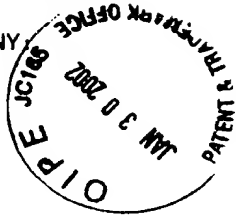
In the Claims:

Claim 6 has been amended as follows:

6. (Amended) A power amplifier system for driving a load comprising:
  - a pulse width modulation power circuit creating ripple spectra;
  - an error amplifier and modulator circuit connected to an input of the pulse width modulation circuit;
  - a demodulation filter connected between said pulse width modulation power circuit and the load;
  - a feedback control loop coupled to said pulse width modulation power circuit and including:
    - an active low-pass filter[, said low-pass filter including a feedback demodulation filter and an isolated-integrator frequency-rejecting network.];
    - a first resistive voltage divider circuit coupled between the output of said demodulation filter and a first input of said low-pass filter;

a feedback demodulation filter coupled to a second input of said low-pass filter and including at least one isolated-integrator band-reject filter; and  
a second resistive voltage divider circuit coupled between the output of said pulse width modulation power circuit and said feedback demodulation filter.

T0:Anthony Niewyk COMPANY



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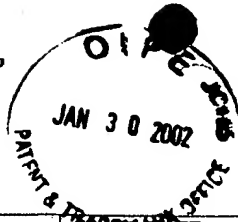
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ART UNIT

PAPER

7

DATE MAILED:

**Please find below and/or attached an Office communication concerning this application or proceeding.**

**Commissioner of Patents and Trademarks**

This letter is in response to a telephone with Anthony Niewyk on 01/02/02. The PTO-326 attached to the office action dated 09/18/01 incorrectly stated that Shortened Statutory Period as "1 month". The Shortened Statutory Period is actually 3 months, contrary to what is stated.

Terry D. Cunningham  
Primary Examiner  
Art Unit: 2816